

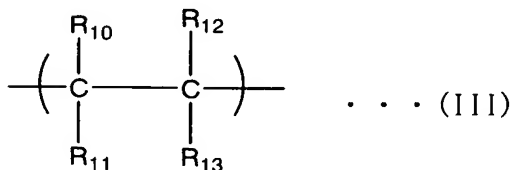
CLAIMS

- $$\begin{array}{c} \left(\begin{array}{cc} R_1 & R_3 \\ | & | \\ -C- & -C- \\ | & | \\ R_2 & \end{array} \right) \cdots (I) \\ \quad \parallel \\ \quad O \\ \quad | \\ O-\left(\begin{array}{c} R_{4b} \\ | \\ CHCH-O \\ | \\ R_{4a} \end{array} \right)_m-R_5 \end{array}$$

$$\begin{array}{c} \text{R}_6 \\ | \\ \text{---}(\text{C} \text{---} \text{C) \text{---}} \\ | \quad | \\ \text{R}_7 \quad \text{R}_8 \\ | \quad | \\ \text{R}_9 \end{array} \quad \cdot \cdot \cdot \text{ (II)}$$

(wherein, R₆ to R₈ each represent, independently, a hydrogen atom or a hydrocarbon group of C1 to C10, and R₉ represents an aryl group), and a block chain C are arranged in a sequence B, A, C.

2. A solid polymer electrolyte according to claim 1, wherein said block chain C contains a repeating unit represented by a formula (III) shown below:



(wherein, R₁₀ to R₁₂ each represent, independently, a hydrogen atom or a hydrocarbon group of C1 to C10, and R₁₃ represents an aryl group or a heteroaryl group).

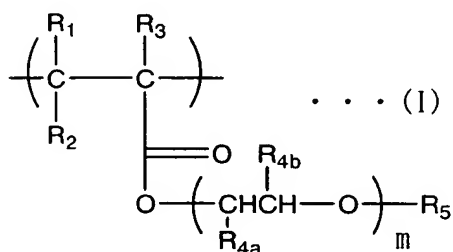
3. A solid polymer electrolyte according to either one of claim 1 and claim 2, wherein said block chains A to C form a copolymer with a B-A-C bonding sequence.
4. A solid polymer electrolyte according to any one of claim 1 through claim 3, wherein a degree of polymerization of a repeating unit represented by said formula (I) is at least 10.
5. A solid polymer electrolyte according to any one of claim 1 through claim 4, wherein a degree of polymerization of a repeating unit represented by said formula (II) is at least 5.
6. A solid polymer electrolyte according to any one of claim 2 through claim 5, wherein a degree of polymerization of a repeating unit represented by said formula (III) is at least 5.
7. A solid polymer electrolyte according to any one of the claim 1 through claim 6, wherein a value of m in said formula (I) is an integer from 5 to 100.

8. A solid polymer electrolyte according to any one of claim 1 through claim 7, wherein a value of m in said formula (I) is an integer from 10 to 100.
9. A solid polymer electrolyte according to any one of claim 2 through claim 8, wherein said group R_{13} in said formula (III) is an aryl group, and a degree of polymerization of a repeating unit represented by said formula (III) is at least 5.
10. A solid polymer electrolyte according to any one of claim 1 through claim 9, wherein a molar ratio $((I)/((II)+C))$ between repeating units represented by said formula (I), and a combined total of repeating units represented by said formula (II) and repeating units within said block chain C is within a range from 1/30 to 30/1.
11. A solid polymer electrolyte according to any one of claim 2 through claim 9, wherein a molar ratio $((I)/((II)+(III)))$ between repeating units represented by said formula (I), and a combined total of repeating units represented by said formula (II) and repeating units represented by said formula (III) is within a range from 1/30 to 30/1.
12. A solid polymer electrolyte according to any one of claim 1 through claim 11, wherein a number average molecular weight of said copolymer is within a range from 5,000 to 1,000,000.
13. A solid polymer electrolyte according to any one of claim 1 through claim 12, which exhibits a microphase separated structure.
14. A solid polymer electrolyte according to any one of claim 1 through claim 13, wherein said electrolyte salt is one or more materials selected from a group consisting of

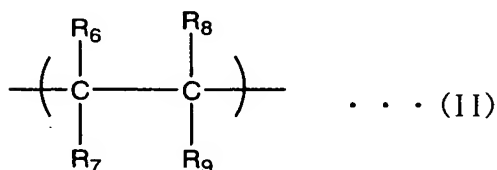
alkali metal salts, quaternary ammonium salts, quaternary phosphonium salts, transition metal salts, and protonic acids.

15. A solid polymer electrolyte according to any one of claim 1 through claim 13, wherein said electrolyte salt is a lithium salt.

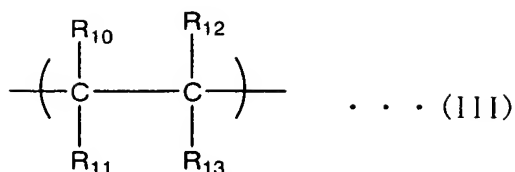
16. A copolymer in which a block chain A containing a repeating unit represented by a formula (I) shown below:



(wherein, R₁ to R₃ each represent, independently, a hydrogen atom or a hydrocarbon group of C1 to C10, R₁ and R₃ may be bonded together to form a ring, R_{4a} and R_{4b} each represent, independently, a hydrogen atom or a methyl group, R₅ represents a hydrogen atom, a hydrocarbon group, an acyl group, or a silyl group, m represents an integer from 2 to 100, and individual R_{4a} and R_{4b} groups are either identical or different), a block chain B containing a repeating unit represented by a formula (II) shown below:



(wherein, R₆ to R₈ each represent, independently, a hydrogen atom or a hydrocarbon group of C1 to C10, and R₉ represents an aryl group), and a block chain C containing a repeating unit represented by a formula (III) shown below:



(wherein, R₁₀ to R₁₂ each represent, independently, a hydrogen atom or a hydrocarbon group of C1 to C10, and R₁₃ represents an aryl group or a heteroaryl group) are arranged in a sequence B, A, C.

17. A copolymer according to claim 16, wherein said block chains A to C are bonded together in a B-A-C sequence.
18. A copolymer according to either one of claim 16 and claim 17, wherein a degree of polymerization of a repeating unit represented by said formula (I) is at least 10.
19. A copolymer according to any one of claim 16 through claim 18, wherein a degree of polymerization of a repeating unit represented by said formula (II) is at least 5.
20. A copolymer according to any one of claim 16 through claim 19, wherein a degree of polymerization of a repeating unit represented by said formula (III) is at least 5.
21. A copolymer according to any one of claim 16 through claim 20, wherein a value of m in said formula (I) is an integer from 5 to 100.
22. A copolymer according to any one of claim 16 through claim 20, wherein a value of m in said formula (I) is an integer from 10 to 100.

23. A copolymer according to any one of claim 16 through claim 22, wherein said group R_{13} in said formula (III) is an aryl group, and a degree of polymerization of a repeating unit represented by said formula (III) is at least 5.
24. A copolymer according to any one of claim 16 through claim 23, wherein a molar ratio $((I)/((II)+(III)))$ between repeating units represented by said formula (I), and a combined total of repeating units represented by said formula (II) and repeating units represented by said formula (III) is within a range from 1/30 to 30/1.
25. A copolymer according to any one of claim 16 through claim 24, wherein a number average molecular weight of said copolymer is within a range from 5,000 to 1,000,000.
26. A copolymer according to any one of claim 16 through claim 25, which exhibits a microphase separated structure.
27. A method of producing a copolymer according to any one of claim 16 through claim 26, which utilizes a living radical polymerization in which a transition metal complex is used as a catalyst, and an organohalogen compound comprising 1 or more halogen atoms is used as an initiator.
28. An ion conductive film containing a polymer comprising a polymer segment (P1) that displays ionic conductivity and a polymer segment (P2) that displays no ionic conductivity, wherein said film exhibits a network-type microphase separated structure.

29. An ion conductive film according to claim 28, wherein said polymer comprising P1 and P2 is a polymer in which said segments are arranged in a P2, P1, P2 sequence.